



Munich Personal RePEc Archive

Decentralization and local public goods: getting the incentives right

Roumasset, James

School of Economics, University of the Philippines

June 1989

Online at <https://mpra.ub.uni-muenchen.de/17111/>
MPRA Paper No. 17111, posted 17 Sep 2009 23:43 UTC

**DECENTRALIZATION AND LOCAL PUBLIC GOODS:
GETTING THE INCENTIVES RIGHT
By James Roumasset**

The paper addresses the nature and locus of appropriate government control in the provision of collective services. It suggests some useful principles for determining organizational structures with the appropriate degree and form of decentralization, which is seen to be an important part of incentive compatibility. In the case of low-income housing, it *cites* the privatization of sites and services and the evolution of upgrading as two promising models be decentralization.

1.

Conventional public finance theory has been commonly invoked to' rationalize government intervention in the face of externalities and public goods. More recently, critics of inefficiencies in public-provided goods and services have begun to speak of government and bureaucratic failures as well. These critiques have led to widespread calls for privatization and "getting the prices right."

Advocacy of "privatization," narrowly defined as divestiture, however, tends to promote the mistaken view that the only way to avoid government inefficiencies is by replacing government provision with the private sector. The narrow privatization view tends to ignore the *raison d'etre* of public goods. In an attempt to accommodate a minimum role of government, Clarkson (1988) defines privatization more broadly to include contracting out, franchise agreements, grants and subsidies, vouchers, volunteers, self-help incentives, user fees, and service shedding. This definition is so broad however as to be of limited operational value.

In this paper, I take the view that the public versus private provision controversy does not provide much guidance in the provision of collective services. Rather the problem addressed is the nature and locus of appropriate government control. The issue is not so much who should provide a service but how to design a governance structure so that individual incentives are aligned with a collective objective. Decentralization is seen to be an important part of incentive compatibility. Like "privatization," however, "decentralization" as a politically expedient slogan is of little value in providing operational guidelines for the reform of public institutions. In what follows, I attempt to suggest some useful principles of determining organizational structures with the appropriate degree and form of decentralization.

2.

According to the conventional wisdom, competitive markets constitute a decentralized mechanism for the alignment of individual incentives with the social objective of efficiency. Decentralized provision of public goods is generally held to be impossible because of the

inherent characteristic of nonexcludability. Since no one can be excluded, each is thought to seek a "free ride" or at least a "cheap ride."

In the new "incentive compatibility" literature (e.g. Groves and Ledyard), it can be shown that under simplifying behavioral assumptions it is possible to design a program where individuals have incentives for honest preference revelation, i.e., that decentralized mechanisms for optimal public good provision are possible. Later work however has shown that these early results are not robust. Drawing on the contributions of Hurwicz and Roberts, Smith (1980) has concluded that

"depending on what one assumes about the strategic behavioral modes of economic agents, the attainment of optimal resource allocation by decentralized pricing systems may be either possible or impossible, but in their case this result does not depend on whether goods are private or public."

This statement provides a sort of "generalized impossibility theorem" for noncooperative games. It is not possible to find an incentive compatible decentralized mechanisms for the efficient coordination of individual action under a broad range of admissible types of strategic behavior. In other words, theoretical explorations in the realm of noncooperative game theory can be summarized by the proposition that "nothing always works."

At the other end of the analytical spectrum, under zero transaction costs an infinite number of socially efficient cooperative solutions can be found ranging from purely centralized to purely decentralized. That is, where transaction costs of both decentralized and centralized solutions are assumed to be zero, "everything works."

The upshot of all this is clear. As Coase, Demsetz, Arrow and many others have been saying for years, it is not analytically rational to attempt the design of public policy informed by models that assume either that no extra-market contracting is possible or that there are no impediments to contracting. Rather, the transaction cost structure of various cooperative mechanisms must be explicitly recognized.

The general normative problem of public policy, then, is how to design organizational structures that align individual incentives to social objectives. A useful conceptual framework for making normative (or explanatory) comparisons among organizational forms is the agency theory (Williamson, 1985; Roumasset, 1988). Agency theory allows one to aggregate the organizational costs and the costs of any remaining disincentives associated with imperfect incentive alignment. The performance of alternative organizations can then be compared according to the aggregate measure, defined as agency costs.

Without using the same terminology, Arrow (1964) has suggested for example that agency costs are minimized by a combination of "top-down" and "bottom-up" control instead of either completely decentralized or completely centralized forms. This proposition can be useful if applied to the problem of allocating water in an irrigation system. The problem with centrally determined water allocations is that this central authority will have difficulties in obtaining and processing accurate information about water productivities at alternative points in the system. On

the other hand, systems that attempt to respond to the articulated demands of users may have difficulty in reconciling those demands with limited supply. In the face of rapidly changing demands, inefficiencies due to the "wrong" rationing rule or price may be even greater than the efficiencies of a centrally directed system.

A more efficient system can be fashioned by combining topdown allocation of water rights with institutions that facilitate exchange. Water "markets" can be established for the exchange of water rights within various sections of the irrigation system. The market clearing price in each section would then provide a signal to central administrators who periodically reallocate water rights among sections.

An interrelated problem concerns the optimal degree of control in an organization. In the centralized, decentralized and hybrid organizations just described, there was an implicit assumption of central enforcement of rights and responsibilities of individual actors in the system. Since neither zero nor perfect enforcement is likely to be efficient, one may presume that there is some internal 'optimum level of enforcement.

Figure 1 provides a framework for the determination of the optimal degree of administrative control. Curve CC measures the administrative costs of control and related functions of monitoring and information. Curve SAI measures the cost of imperfect spatial allocation of water at different levels of control and information costs, C. The sum of CC and SAI gives the total agency cost, which is minimized at the optimum control point C*. The advantages and disadvantages of each institutional characteristic are influenced by conditions of the local physical and economic environment in which the irrigation system operates. For example, conditions of relative water scarcity may increase the gap between water supplies and demand and increase benefits from water management. With water scarcity, the gap between water supplies and demand grows and coordination functions of management activities become more important. In terms of Figure 1, this suggests that C* increases with water scarcity.

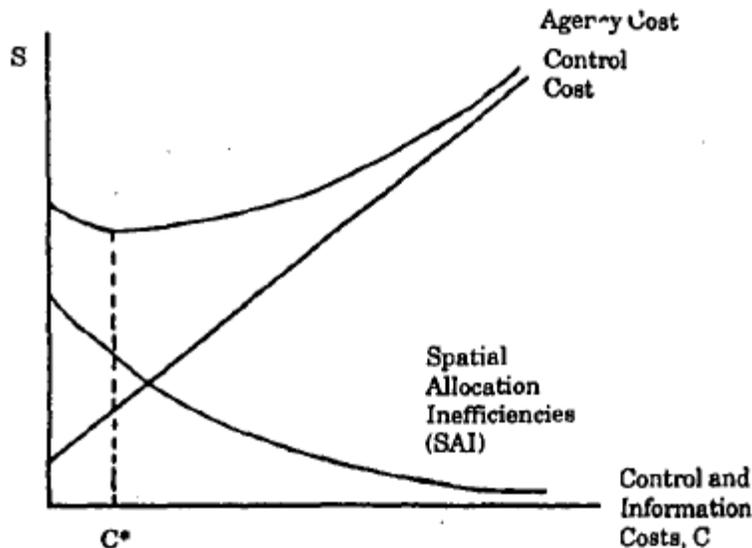


Figure 1. Optimal Administration of Water Control

Consideration of the optimal degree of centralization and control implies a bilateral relationship between economic agents and a governing body. More generally the problem of incentive compatible organization of government services involves multilateral relationships and is sometimes referred to as "the architecture of economic systems" (Stiglitz, 1987). The incentive design problem in hierarchical and other multilateral systems is to motivate various parties to a cooperative arrangement to pursue their comparative advantage so as to maximize their contribution to the group.

The key tool in the efficient organization of local public services is financial management. The first task of effective financial management is to clarify and maintain an efficient division of responsibility. The central governance structure for aligning performance with prescribed responsibility is reciprocal accountability between the providing organization and the user. In the case of water delivery, this can be effected by a system of billing and collection wherein the user loses service if he doesn't pay (or meet other responsibilities) and the provider does not receive full payment if services are substandard.

Financial management is also the 'key tool to minimize unproductive rent-seeking. Heavily subsidized irrigation systems and other services are characterized by an "iron triangle" of beneficiaries. Bureaucrats politicians, and special interests (e.g., contractors and farmers) all perceive themselves as gaining from the subsidies. Because of the inefficient design, construction, operation and maintenance promoted under the rent-seeking regime, however, transfers to the triangle of beneficiaries are short-lived and exceeded by transfers away from taxpayers (Repetto, 1986).

As Wicksell emphasized, the primary check against rent-seeking is benefit taxation. In practice, benefit taxation is often not viable due to the presence of a large number of hard-to-identify indirect beneficiaries. This problem can be solved by taxing direct beneficiaries according to their share of total benefits and financing indirect benefits through indirect taxation or from general revenue (Roumasset, 1987).

By making the water authority responsible for paying a certain percentage of costs and giving them the authority to collect those costs from the farmers through charges based on the value of water received, the pork-barrel mechanism of irrigation investment is thwarted. Whether the authority is a utility or is directly controlled by the beneficiaries, it will be motivated to maximize the benefits of a given structure and to avoid unnecessary expenditures. Farmers will likewise be motivated to pay, in order to avoid losing the benefits of irrigation.

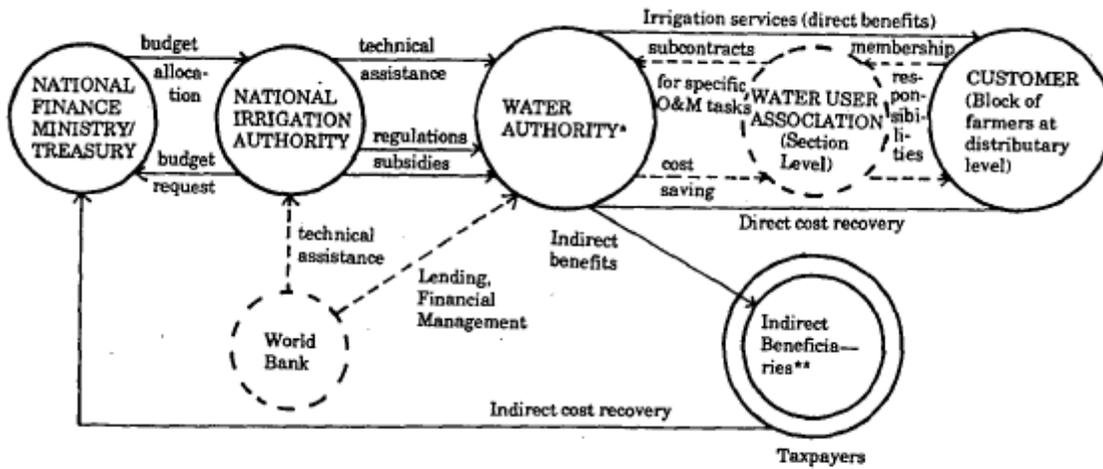
An idealized irrigation system is illustrated in Figure 2 based on the following principles:

1. Financial responsibility - The irrigation authority is responsible for repaying the costs of the irrigation system and the farmer beneficiaries are responsible for paying the irrigation authority.
2. Decentralization - Each function is carried out by the smallest efficient unit. Thus one irrigation authority is organized for each major irrigation system. Only technical

assistance, subsidies, and regulation are to be administered at a higher level of government.

3. Pareto safety - Farmers are not coerced to pay for a system whose' costs exceed the benefits. This can be assured through political representation in the water authority or through voluntary subscription to the irrigation service.

Figure 2 - Effective Compatibility in Irrigation Finance



*e.g. Water District, utility company, local government, or federation of user associations.

**Agriculture related industries, rural labor force, consumers, and other taxpayers.

Note: — Primary relation - - - - - Secondary relation

The appropriate degree of control vested in the water authority (relative to the central regulatory body and to the users) depends on a number of technical, social, and political parameters. The extent to which a water users association can take over a number of management tasks depends, for example, on social determinants of successful collective action and on the external political and legal environment.

The general analytical problem of optimal centralization of a water authority is much the same as the well-known problem of optimal separation of ownership and control in the industrial organization literature. As Jensen and Meckling (1976) and many others have pointed out, delegating specific management tasks increases specialization without any necessary loss of critical control functions and cannot be judged on a *priori* grounds to be inefficient. Similarly a water authority may retain ultimate responsibility for operation and maintenance and still delegate most of the specific managerial tasks to the water users' association. Whether we are discussing a corporate board of directors or a public water district, the body with responsibility for providing the service should retain residual control over the executing agent, e.g., the water users' association remains accountable to the water district. Thus, if the water authority retains

responsibility for irrigation services, it must also retain some monitoring and control functions. This means that the water authority must be able to impose sanctions on the user association for noncompliance and ultimately to withdraw some of the managerial functions that it has granted. Where preconditions favor full responsibility and control being eventually vested in the farmers, it may be appropriate to build in a schedule for decontrol as part of the irrigation project design. This could include a deadline, for example, for the full operation and maintenance responsibility of an irrigation system to be turned over to a federation of the user associations operating the different sections of an irrigation system.

3.

In this section I attempt to state principles and guidelines for the appropriately decentralized provision of low-income housing. The first step is to articulate the rationale for public provision and to describe the first-best solution.

The main reason for public involvement in low-income housing is that housing is a basic need. The Philippine Government, for example, has a constitutional mandate to "establish, maintain, and ensure adequate social services in the field of housing ... to guarantee enjoyment by the people of a decent standard of living" (Angeles, 1985). As Harberger (1978) has noted, basic needs are most clearly represented as consumption externalities. Where many citizens have a willingness-to-pay for improved low-income housing, an efficient quantity and subsidy for low-income housing can be determined using the Lindahl equilibrium. The Lindahl solution can be implemented as a voucher where the voucher price to the recipient is given by the intersection of the beneficiaries' demand curve and the socially efficient quantity of housing for the beneficiary. The difference between the voucher price (beneficiary charge) and the face value of the voucher is the housing subsidy.

The Lindahl voucher can be used to accommodate other housing-related externalities as well. Poor maintenance of one house affects the property and rental value of neighboring houses, an externality that is exacerbated by fixed-lease tenancy and referred to as the "slumlord's dilemma." The appearance of slums may lower the aesthetic welfare of passersby and, if slums contribute to criminal activity, "neighborhood effects" of slums may be more serious (see e.g., Weicher, 1979). These problems are all consumption externalities and are logically included in the Lindahl solution.

The Lindahl solution provides a first-best alternative to centralized provision. The centralized solution has been justly criticized for high costs and low number of beneficiaries. Slum "improvement" often involves eviction of illegal squatters and slum clearance thereby making those who perhaps should be targeted as beneficiaries decidedly worse off (see also Swan, Wegelin, and Panchee, 1983).

The high subsidies inherent in the centralized solution also breed rent-seeking. The centralized system can be captured by an iron triangle of politicians, bureaucrats, and special interests (contractors and pork-barrel beneficiaries). Politicians increase their power through the contributions given by contractors and by extending patronage to the housing beneficiaries.

Contractors get non-competitive contracts with loose auditing mechanisms that allow them to obtain high profit margins. Due to excess demand for subsidized housing, the beneficiaries are "part of the deal" and tolerate substandard construction and ancillary services. The bureaucrats are commonly allied with the politicians and get either promotions or increased budgets as their part of the bargain.

The objective of decentralization and incentive realignment then can be thought of as simultaneously implementing a solution close to the Lindahl equilibrium and removing the incentives for rent-seeking. As both Wicksell and Lindahl understood, rent-seeking can be avoided by benefit taxation (it was only later authors who compared benefit taxation to various measures of ability to pay according to equity). The beneficiaries can be defined according to the Lindahl solution. The share of costs to be paid by the direct beneficiaries is given by the beneficiaries' demand relative to aggregate demand including the value of the consumption externalities. Administrative costs aside, tax instruments should also be designed to tax the indirect beneficiaries. To the extent that the indirect beneficiaries can be roughly identified with the tax paying population and given that direct taxation of the indirect beneficiaries is administratively costly, the subsidies portion of low income housing may be financed out of general taxation.

Construction and provision of housing services can be modeled as in Figure 2. Two possible approaches are outlined here. The first approach to be described corresponds to one of Rondinelli's four categories of decentralization called privatization. In this particular variant of privatization, the government acts as facilitator in ensuring that the basic "sites and services" are provided. In this approach developers play the key roles in design, construction and the sale. The government provides the appropriate subsidy, may help in arranging zoning, and provides minimum standards and specifications and the corresponding auditing mechanisms.

The second method of decentralization to be discussed falls under Rondinelli's category of "devolution." As noted in Reyes (1988), this approach is especially relevant to upgrading the quality of housing in target areas. The World Bank approach to upgrading focuses on minimum relocation of housing in the target area in order to upgrade the basic services, especially water, sewage, and electricity. Local governments are the focal points of these efforts.

Under central government provision, the government budget for a particular locality is not closely linked with either the demands or the needs of that locality. Moreover, beneficiaries are apt to feel isolated from the central government and to feel a correspondingly lower sense of responsibility about repayment.

Local government accommodates these concerns and provides reciprocal accountability between provider and recipient. Mechanisms can be designed so that the local government housing authority is made accountable to direct and indirect beneficiaries via voting and regulation from the national housing authority. In addition, incentives are needed so that the local government is rewarded for responsible provision and penalized for substandard provision, maintenance and management. Direct beneficiaries can be made accountable for payment of their assessed share of the costs simply by cutting off services to delinquents.

That is, the "publicness" of low income housing lies in the consumption externalities and the economies of scale involved in production and provision. Excludability is still a viable instrument of enforcement for the direct beneficiaries.

As Radner suggests, it is not how much but how to decentralize that is the meaningful question. The privatization of sites and services and the devolution of upgrading provide two promising models of decentralization. Under what economic and political environments these arrangements have large or small advantages is a subject for further investigation. The agency theory approach discussed above provides a promising framework for such evaluations.

References

- Angeles, E. (1985), *Public Policy and the Philippine Housing Market*, PIDS Monograph Series No. 7.
- Arrow, K. (1964), "Control in Large Organizations," *Management Science*, Vol. 10 (1963-64), pp. 397-408.
- Arrow, K. (1969), "The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-Market Allocation," *The Analysis and Evaluation of Public Expenditures: The PPB System*, Washington, D.C., pp. 46-64.
- Arrow K. (1974), *The Limits of Organization*, New York: Norton. Clarkson, K.W. "Privatization of the State and Local Level," University of Miami Law and Economics Center Working Paper, 36 p., 1988.
- Coase, R. (1960), "The Problem of Social Cost," *Journal of Law and Economics*, 3: 1-44.
- Cornwall, P. (1984), *Introduction to the Use of General Equilibrium Analysis*, North Holland Press.
- Demsetz, H. (1969), "Information and Efficiency: Another Viewpoint," *Journal of Law and Economics*, 12: No. 1 (April): 1-22.
- Friedman, Lee S. (1984), *Microeconomic Policy Analysis*, New York: Basic Books.
- Groves, T. and Ledyard, J. (1977), "Optimal Allocation of Public Goods: A Solution to the Free Rider Problem," *Econometrica*, 45 (May): 783-809.
- Harberger, A. (1978), "On the Use of Distributional Weights in Social Cost-Benefit Analysis," *Journal of Political Economics*, 86 (Supplement): S87-S120.
- Hurwicz, L. (1972), "On Informationally Decentralized Systems," In *Decision and Organization*, ed. C. McGuire and R. Radner, Amsterdam.
- Jensen, M.C. and Meckling, W.H. (1976), "Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure," *Journal of Financial Economics*, 3 (October): 305-360.
- Ledyard, J. and Roberts, J. (1974), "On the Incentive Problem with Public Goods," Discussion Paper No. 116, Center Math Stud. Econ. Manage. Sci., Northwestern University.
- Lindahl, E. (1950), "Theory of Just Taxation," In *Classics in the Theory of Public Finance*, ed. R. Musgrave and A. Peacock, London: McMillan and Co.
- Radner, R. (1972), "Normative Theories of Organization, An Introduction," Chapter 9 In *Decision and Organization*, ed. C. McGuire and R. Radner, Amsterdam.

- Repetto, R. (1986), "Skimming the Water: Rent-Seeking and the Performance of Public Irrigation Systems," World Resources Institute, Washington, D.C. Reyes, J. "Management, Decentralization, and the Provision of Local Public Goods: the Case of Low-Income Housing," mimeo., 1988.
- Rondinelli, D. *et al.* (1983), *Decentralization and Development: Policy Implementation in Developing Countries*, Beverly Hills: Sage.
- Roumasset, J. "The Public Economics of Irrigation Management and Cost Recovery," World Bank Working Paper, Washington, D.C., 62 p., 1987.
- Roumasset, J. "Agency Theory, Agricultural Firms, and the New Institutional Economics," University of Hawaii Department of Economics Working Paper No. 1, 8 August, 1988.
- Smith, V.L. (1980), "Experiments with a Decentralized Mechanism For Public Good Decisions," *The American Economic Review*, 70: 4 (September): 584-599.
- Stiglitz, J. "Human Nature and Economic Organization," mimeo., 1988. Swan, P. *et al.*, eds. (1983), *Management of Sites and Services Housing Schemes: The Asian Experience*, Institute for Housing Studies.
- Weicher, J. (1979), "Urban Housing Policy," In *Current Issues in Urban Economics*, ed. D. Mieskoushi and M. Straszheim, Baltimore: The Johns Hopkins University Press.
- Wicksell, K. (1950), "A New Principle of Just Taxation," In *Classics In the Theory of Public Finance*, ed. R. Musgrave and A. Peacock, London: MacMillan & Co.
- Williamson, O.E. (1985), *Economic Institutions of Capitalism: Firms, Markets and Relational Exchange*, New York: Free Press.